

WHAT IS CLAIMED IS:

1. A by-product elimination device used in a power generation system, comprising at least any one of:

5 (a) a fuel pack provided with a fuel charged portion having a power generation fuel having a liquid or gas containing hydrogen charged therein; and

10 (b) a power generation module which can be attached to or detached from said fuel pack, the module including a reforming portion which transforms said power generation fuel supplied from said fuel charged portion into first gas containing hydrogen gas and carbon dioxide as main components, and a fuel cell which generates an electrical energy by using the 15 hydrogen gas contained in said first gas,

said by-product elimination device further comprising an absorbent charged portion which selectively absorbs carbon dioxide contained in said first gas fed from said reforming portion and feeds 20 second gas whose carbon dioxide concentration is lowered by said first gas to said fuel cell.

2. The by-product elimination device according to claim 1, wherein the volumetric capacity of said absorbent charged portion is increased as carbon dioxide is absorbed.

25 3. The by-product elimination device according to claim 1, wherein said absorbent charged portion has

TOP SECRET//REF ID: A654321

calcium oxide or calcium hydroxide.

4. The by-product elimination device according
to claim 1, wherein said absorbent charged portion
includes a carbon dioxide absorption portion and a
calcium carbonate collection portion containing calcium
carbonate generated in said carbon dioxide absorption
portion.

5. The by-product elimination device according to
claim 4, wherein said carbon dioxide absorption portion
supplies to said calcium carbonate collection portion
calcium carbonate generated as carbon dioxide is
absorbed.

6. The by-product elimination device according to
claim 4, wherein said carbon dioxide absorption portion
15 contains calcium oxide or calcium hydroxide.

7. The by-product elimination device according to
claim 1, wherein said absorbent charged portion
includes a carbon dioxide absorption portion, a calcium
carbonate collection portion which collects calcium
carbonate generated in said carbon dioxide absorption
portion, and a water absorption portion which absorbs
water generated in said carbon dioxide absorption
portion.

25 8. The by-product elimination device according to
claim 7, wherein said water absorption portion supplies
to said carbon dioxide absorption portion calcium
hydroxide generated as water is absorbed.

9. The by-product elimination device according to
claim 8, wherein said carbon dioxide absorption portion
supplies to said calcium carbonate collection portion
calcium carbonate generated as carbon dioxide is
5 absorbed.

10. The by-product elimination device according to
claim 7, wherein said water absorption portion contains
calcium oxide.

11. The by-product elimination device according to
10 claim 7, said carbon dioxide absorption portion
contains calcium hydroxide.

12. The by-product elimination device according to
claim 1, wherein a reforming reaction in said reforming
portion includes a first reaction which generates
15 hydrogen gas and a second reaction which reforms carbon
monoxide generated with said first reaction into carbon
dioxide, and said absorbent charged portion can absorb
carbon dioxide generated by the second reaction.

13. The by-product elimination device according to
20 claim 1, wherein said reforming portion has at least
one of a vapor reforming reaction portion, an aqueous
shift reaction portion and a selected oxidation
reaction portion.

14. The by-product elimination device according to
25 claim 1, wherein said reforming portion has a vapor
reforming reaction portion and an aqueous shift
reaction portion, and said absorbent charged portion is

100-139-128-129-130

connected to said vapor reforming reaction portion and said aqueous shift reaction portion.

15. The by-product elimination device according to claim 1, further comprising a water collection portion which selectively collects at least water among 5 discharged substances discharged from said fuel cell.

16. The by-product elimination device according to claim 1, wherein said by-product elimination device includes a water collection portion which selectively 10 collects at least water among discharged substances discharged from said fuel cell, and said fuel charged portion, said absorbent charged portion and said water collection portion are separated from one another.

17. The by-product elimination device according to claim 1, wherein said absorbent charged portion is 15 arranged in said fuel pack, and said by-product elimination device has a path used for feeding the first gas fed from said reforming portion to said fuel pack from said power generation module and a path used for feeding the second gas fed from said absorbent charged portion to said power generation module from 20 said fuel pack.

18. The by-product elimination device according to claim 1, wherein said reforming portion generates the 25 first gas from said power generation fuel by an exothermic reaction, and said absorbent charged portion is set so as to supply heat generated by absorbing

carbon dioxide to said reforming portion.

19. A fuel pack which can be connected to a power generation module without restraint, comprising:

5 a fuel charged portion which contains a fuel to be supplied to a reforming portion which generates hydrogen and carbon dioxide from said fuel, and whose volumetric capacity is reduced as carbon dioxide is generated in said reforming portion; and

10 a carbon dioxide absorption portion which absorbs carbon dioxide generated by said reforming portion and whose volumetric capacity is increased as carbon dioxide is generated in said reforming portion.

20. A fuel pack which can be connected to a power generation module without restraint, comprising:

15 a fuel charged portion which contains a fuel to be supplied to a reforming portion which generates mixed gas containing hydrogen and a first by-product from said fuel, and whose volumetric capacity is reduced as said first by-product is generated in said reforming portion;

20 a first by-product absorption portion which generates a second by-product by absorbing said first by-product from said mixed gas, and whose volumetric capacity is increased as said first by-product is generated in said reforming portion; and

25 a second by-product absorption portion which absorbs said second by-product in a mixture including

said hydrogen and said second by-product fed from said first by-product absorption portion.

21. The fuel pack according to claim 20, which
further comprises a third by-product absorption portion
5 which absorbs a third by-product from a fuel cell which
generates said third by-product as power is generated
by using the hydrogen fed from said second by-product
absorption portion.

22. The fuel pack according to claim 20, wherein
10 said first by-product absorption portion and said
second by-product absorption portion are connected to
each other, and said third by-product absorption
portion is separated from said first by-product
absorption portion and said second by-product
15 absorption portion.

23. A fuel pack which can be connected to a power generation module without restraint, comprising:

20 a fuel charged portion which contains a fuel to be supplied to a reforming portion which generates mixed gas including hydrogen and a first by-product from said fuel, and whose volumetric capacity is reduced as said first by-product is generated in said reforming portion;

25 a first by-product absorption portion which absorbs said first by-product from said mixed gas, and whose volumetric capacity is increased as said first by-product is generated in said reforming portion; and

a second by-product absorption portion which collects a second by-product from a fuel cell which generates power by using said hydrogen fed from said first by-product absorption portion, and whose 5 volumetric capacity is increased as power is generated in said fuel cell.

TOP SECRET//SI